UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 5, 2026

MEMORANDUM TO: Josh Borromeo, Chief
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Brian Bettes, Project Manager ***/RA/***
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE MARCH 24, 2026, CLOSED MEETING WITH NEWCLEO AMERICAS LLC (EPID L-2026-LRM-0034)

Meeting Information:

Applicant: Newcleo Americas LLC

Project No.: 99902162

Public Meeting Notice Agencywide Documents Access and Management System (ADAMS) Accession No.: ML26075A002

Presentation Slides Accession No.: ML26082A013

Meeting Attendees: See the Enclosure 1 for a list of meeting attendees

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Meeting Summary:

The U.S. Nuclear Regulatory Commission (NRC) staff conducted the meeting in accordance with NRC Management Directive 3.5, “Attendance at NRC Staff-Sponsored Meetings” (ML21180A271).

Newcleo requested this meeting with NRC staff to introduce their organization and provide an overview of their advanced nuclear reactor design. The meeting was closed to the public.

The meeting began with introductory remarks by the project manager, followed by participant introductions. It then proceeded directly to technical discussions. Key discussion points are summarized in Enclosure 2 of this letter.

No regulatory decisions were made as a result of this meeting.

Enclosures:
1. List of Attendees
2. Meeting overview

cc: Newcleo Americas LFR
via GovDelivery

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Public: ML26112A164
Package: ML26112A16

LIST OF MEETING ATTENDEES

SUMMARY OF THE MARCH 24, 2026, CLOSED MEETING WITH NEWCLEO AMERICAS LLC

(EPID L-2026-LRM-0034)

Name	Organization
Candace de Messieres	US NRC
Josh Borromeo	US NRC
Brian Bettes	US NRC
Reed Anzalone	US NRC
Matthew Hiser	US NRC
Alex Siwy	US NRC
Wendy Reed	US NRC
Alexandra Terres	US NRC
Jadin Swarts	US NRC
Greg Oberson	US NRC
Alec Neller	US NRC
Jenise Thompson	US NRC
Joseph Messina	US NRC
Zachary Johnson	Newcleo
John Hanna	Newcleo
Guido Gerra	Newcleo
Simon Pirmet	Newcleo
Mickaël Gandolin	Newcleo
Stefano Buono	Newcleo
Luciano Cinotti	Newcleo
Ruggero Corrias	Newcleo
James Cook	Newcleo
Stéphane Calpena	Newcleo
Miguel Aguila Cano	Newcleo
Anne-Claire Scholer	Newcleo
Emanuele Fontani	Newcleo
Aurélien Bernard	Newcleo
Massimo Ciambrella	Newcleo
Samuel Barbier	Newcleo
Dario Carloni	Newcleo
Joffrey Germa	Newcleo
Vittorio Vaiarelli	Newcleo
Alexandre Villedieu	Newcleo
Francisco Garcia Ferrè	Newcleo
Matthew Lukacs	Newcleo
Travis Chapman	Newcleo
Robert Sweeney	Newcleo
Pauline Verdier	Newcleo

Name	Organization
Mariano Tarantino	Newcleo
Andrea Barbensi	Newcleo
Andrea Barbarino	Newcleo

MEETING OVERVIEW

MARCH 24, 2026, CLOSED MEETING WITH NEWCLEO AMERICAS LLC

(EPID L-2026-LRM-0034)

On March 24, 2026, Newcleo Americas LLC (Newcleo) presented slides during the meeting entitled “Pre-application Meeting with Newcleo Americas LLC (newcleo) regarding its plans for a Lead-Cooled Fast Reactor” (ML26075A002).

The following bullets describe the main points of discussion during this presentation:

Overview of Newcleo

- Newcleo presented an overview of its business operations to NRC staff. The company is investigating lead-cooled fast reactor (LFR) technology, utilizing international expertise and operating experience, existing experimental lead loops, and engaging in ongoing research and development initiatives. These include developing a 10 MWt non-nuclear demonstration reactor and a planned mixed oxide (MOX) fuel fabrication facility. Additionally, Newcleo is expanding its manufacturing capabilities to support its commercial deployment of this technology.

LFR Design Overview

- Newcleo presented an overview of its first-of-a-kind (FOAK) LFR design, the LFR-AS-200. The design is a 200 MWe (480 MWt) pool-type LFR using MOX fuel. Newcleo highlighted the intrinsic safety features of LFRs, which include the high boiling point of lead, low-pressure operation, negative reactivity feedback, and radionuclide retention properties of lead. Newcleo described the LFR-AS-200 as having six in-vessel primary pump/steam-generator modules for power operation and three passive, in-vessel decay heat removal modules.

Licensing Approach

- Newcleo is interested in deploying the LFR-AS-200 at several potential U.S. sites. Through pre-application engagement with the NRC, Newcleo intends to explore options for a future construction permit application for the LFR-AS-200 under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, “Domestic Licensing of Production and Utilization Facilities,” or Part 53, “Risk-Informed, Technology-Inclusive Regulatory Framework for Commercial Nuclear Plants.” Newcleo is also interested in exploring the approach described in the 2017 NRC white paper entitled “A Regulatory Review Roadmap for Non-Light Water Reactors” (ML17312B567) that would allow limited prototype operation of the FOAK LFR-AS-200 prior to full-power commercial operations.

Discussion

- Newcleo requested the staff clarify the extent to which the licensing-basis elements developed under the DOE-STD-1271-2025 authorization pathway could be used in a future NRC application. The staff responded stating that DOE’s regulations and guidance differ somewhat from the NRC’s but frequently reference NRC guidance as an acceptable approach. Therefore, analyses, methodologies, and supporting data developed for a DOE-authorized prototype using NRC guidance would generally be expected to be applicable to NRC licensing.

- Newcleo requested clarification on if a Class 103 license could be used for a FOAK design, specifically considering the approach described in a 2017 NRC white paper (ML17312B567). The staff responded that this white paper provides relevant considerations related to operating a FOAK facility as a prototype plant to collect data, with restrictions on plant operations during the prototype period, which is allowed under the regulations of 10 CFR 50.43(e)(2). The staff recommended extensive pre-application engagements prior to an application if Newcleo is considering this approach.

- Newcleo requested clarification on identifying and screening external hazards for advanced reactor designs. The staff responded that an applicant could use a risk-informed approach to evaluating external hazards. The staff cited the Kemmerer Unit 1 construction permit application (ML25276A288) as an example of evaluating external hazards using a risk-informed process.

- Newcleo requested clarification on the usage of DOE owned sites and their site hazard characterizations. The staff responded that the NRC is familiar with the hazard characterizations performed for DOE facilities, and that applicants to the NRC would need to demonstrate that the existing hazard analysis or site characterization information for the DOE site is applicable and representative of the selected site.

- Newcleo requested clarification on the staff's expectations regarding fire protection for non-LWR designs. The staff pointed to NEI 18-04, "Risk-Informed Performance-Based Technology Inclusive Guidance for Non-Light Water Reactor Licensing Basis Development," Revision 1 (ML19241A472), as a starting point for considering fire hazards. However, the staff noted that fire protection programs are not discussed in detail in NEI 18-04 or NEI 21-07, "Technology Inclusive Guidance for Non-Light Water Reactors," Revision 0 (ML21250A378). The staff identified that other applicants have committed to following Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Revision 5 (ML23214A287), but noted that this guidance still has gaps with respect to non-LWR designs.

- Newcleo requested information on approaches to considering load handling and the potential for load drop events. The staff responded by stating that the NRC has endorsed consensus standards related to heavy load handling programs, single-failure-proof cranes, and below-the-hook lifting devices in Regulatory Guide 1.244, "Control of Heavy Loads at Nuclear Facilities," Revision 0 (ML21006A346). The endorsed standards include ASME NML-1, "Rules for the Movement of Loads Using Overhead Handling Equipment in Nuclear Facilities," 2019, which provides an updated method to qualitatively risk-inform heavy load handling programs and serves as an alternative to NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants" (ML070250180).

- Newcleo requested clarification on how to address aircraft impact assessment when applying a risk-informed, performance-based approach. The staff responded that 10 CFR 50.150, "Aircraft Impact Assessment," requires design features to be included as necessary to mitigate the effects of aircraft impacts. The staff noted that the NRC proposed to sunset 10 CFR 50.150 late last year but withdrew 10 CFR 50.150 from the Sunset Rule rulemaking to address significant and adverse public comments. As of the issuance of this summary, the NRC has adopted a final rule adding a conditional sunset provision to 10 CFR 50.150 (91 FR 17757). The staff also commented that the 10 CFR Part 53 rulemaking, which was not yet issued as final at the time of the meeting, may

provide additional clarity on expectations for aircraft impact assessment in a risk-informed, performance-based framework. 10 CFR Part 53 was issued as a final rule on March 30, 2026 (91 FR 15696).

- Newcleo asked the staff if there are expected to be changes to Appendix B to 10 CFR Part 50 to align with risk-informed, performance-based licensing approaches. The staff responded that Executive Order 14300 directed the staff to perform a wholesale revision of the NRC's regulations, including Part 50. These rulemakings will be available for comment within the coming months. Additionally, the staff pointed to an ongoing review of NEI 22-04, "Utilization of ISO 9001 and Other Non-Nuclear Suppliers for Safety-Related Applications," which is a proposed alternative to traditional 10 CFR Part 50, Appendix B, quality assurance programs.

- Newcleo requested information on guidance related to security and safeguards considerations at the design stage of an advanced reactor. The staff stated that they are aware of draft regulatory guides that may be relevant but recommend separate discussions with the NRC's Office of Nuclear Security and Incident Response and Office of Nuclear Material Safety and Safeguards. The staff noted that some guidance documents related to safeguards or security contain safeguards information (SGI) or classified information, and applicants must set up appropriate programs to handle these documents before they can be made available.

- Newcleo requested clarification on NRC staff's requirements and expectations for incorporating post-Fukushima safety enhancements into advanced reactor designs, specifically related to how 10 CFR Part 53 addresses the requirements 10 CFR 50.155, "Mitigation of beyond-design-basis events." The staff stated that they could not comment on the content of 10 CFR Part 53 because it was still under development; however, the staff noted that the proposed rule from 2024 did not include such provisions, though beyond-design-basis events (referred to in the rule as "very unlikely event sequences") must be addressed in the licensing basis. As noted above, 10 CFR Part 53 was issued as a final rule on March 30, 2026.

- Newcleo requested clarification on the staff's expectations for demonstrating the ability to credit the primary coolant's radionuclide retention capacity for functional containment. The staff responded that a substantial body of evidence would be expected. The staff pointed to recently reviewed topical reports for source term and consequence analysis (ML25211A271 and ML25211A267) as helpful to outline the kind and amount of information expected in a liquid metal-cooled reactor crediting some degree of retention in the primary coolant.

- Newcleo requested clarification on whether there is a requirement for an interim spent fuel storage facility to accommodate a full-core offload. The staff responded that there is no requirement to accommodate a full core offload, but that applicants have historically chosen to have the capability to remove all fuel from the core to be able to perform a full-scope inspection of the reactor internals.

  Newcleo requested clarification on the disposal options for lead coolant following reactor operation. The staff responded that disposal pathways for large volumes of activated lead are not well-established in the U.S. and recommended that Newcleo engage with NRC waste management experts to clarify regulatory expectations.

- Newcleo requested the staff discuss whether a materials qualification approach involving an initial demonstration phase in a FOAK reactor in lieu of integral effects tests in a test reactor could be acceptable provided that there is adequate defense-in-depth and specific provisions to address unexpected phenomena. The staff stated a test reactor to examine integral effects is not required by NRC regulations but certainly could be useful to support materials qualification. The staff indicated the high-level approach described by Newcleo could be acceptable but is highly dependent on the details, such as materials, environmental conditions, key passive components in the reactor, and what the consequences of a potential passive component failure would be. The staff observed that the proposed concept could introduce considerable uncertainty requiring resolution, both regarding material performance and its implications for other aspects of the safety analysis.

- Newcleo requested clarification on expectations regarding the selection of ASME Code editions for advanced reactors. The staff stated that 10 CFR 50.55a is not applicable to non-LWRs with respect to ASME Code. In addition, the staff stated that ASME Code editions applicable to advanced reactors have been endorsed by NRC guidance. For example, Regulatory Guide 1.87, “Acceptability of ASME Code, Section III, Division 5, ‘High Temperature Reactors,’” Revision 3 (ML25176A084), endorses the 2023 Edition of ASME BPVC Section III, Division 5 for high temperature reactors.